

MPM 405 & EPI 205A - PRINCIPLES OF EPIDEMIOLOGY

Course Outline, Fall 2009 MW 11-12, F 11-1; 2020 Valley Hall

Instructors

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MPM 405 (EPI 205A) deals with basic epidemiologic concepts and approaches to population health issues in veterinary and human medicine. The course covers a wide spectrum of topics, some of which (e.g., outbreak investigation, properties of tests) will be treated in more depth, while others (e.g., epidemiologic study design) will be introduced, with more emphasis in subsequent courses.

Course Learning Objectives

At the conclusion of the course, students will:

1. Understand and explain what epidemiology is and how it relates to other disciplines.
2. Understand and explain how epidemiology is used and applied.
3. Understand and be able to apply commonly used terms and methods of epidemiology:

Rates, ratios, and proportions: Students will be able to define, derive, interpret, and apply incidence, prevalence, relative risk, odds ratios, attributable risk, case-fatality, and other specific rates, ratios, and proportions.

Define and properly use terms to describe disease and disease transmission.

Describe the conduct of and interpret data from an outbreak investigation.

Define, derive, interpret, and apply test properties, including sensitivity, specificity, and predictive value.

Define and discuss the relevant strengths and weaknesses of descriptive vs. analytic studies; experimental vs. observational studies; cohort studies, case-control studies, and cross-sectional studies. Given a specific study, students will be able to characterize it with respect to its basic design. Given a specific epidemiologic study question, students will be able to identify the study design most appropriate for answering the question and discuss the relative strengths and limitations of the chosen study design and why other designs are less appropriate.

Format

The course is based on lectures, discussions, textbook readings, and exercises. Some exercises will be completed in class, while others must be completed before class. You are allowed to work in groups on the take-home exercises that must be turned in at the beginning of the discussion period. Keep a copy of the answers you turn in so that you can refer to it during the subsequent in-class discussion. You must do your own work on all assignments. The lectures often will not follow the textbook; the text therefore serves as a supplement to the lectures.

Required Textbook (for sale at Health Sciences Bookstore next to Scrubs Café):

Gordis, L. 2008. Epidemiology, Fourth Edition. Saunders, Philadelphia.

Other general texts:

Ahlbom A, Norell S. 1990. Introduction to Modern epidemiology, 2nd Ed. Epidemiology Resources Inc, Massachusetts (WA105 A66).

Dohoo IA, Martin SW, Stryhn H. 2003. Veterinary Epidemiologic Research. AVC Inc, Charlottetown, PEI.

Fletcher RH, Fletcher SW, Wagner EH. 2005. Clinical Epidemiology. 4th Ed. Lippincott Williams and Wilkins, Philadelphia. (WA950 F57)

Hennekens CH, Buring JE. 1987. Epidemiology in Medicine. Little, Brown, and Co: Boston.

Kahn HA. 1983. An Introduction to Epidemiologic Methods. Oxford Univ. Press, NY. (WA5 M65)

MacMahon B, Trichopoulos D. 1996. Epidemiology: Principles and Methods. 2nd Ed. Little, Brown and Co: Boston.

Martin, Meek and Willeberg. 1987. Veterinary Epidemiology. Iowa State University Press. (SF780.9 M37)

Rothman KJ, Greenland S, and Lash TL. 2008. Modern Epidemiology. 3rd Ed. Lippincott Williams & Wilcott: Philadelphia.

Sackett DL, Haynes RB, Guyatt GH, Tugwell P. 1991. Clinical Epidemiology: A Basic Science for Clinical Medicine. 2nd Ed. Little, Brown and Co: Boston.

Schwabe CW, Riemann HP, Franti CE. 1977. Epidemiology in veterinary practice. Lea and Febiger, Philadelphia. (SF780.9 S38)

Smith RD. 2006. Veterinary Clinical Epidemiology: a problem-oriented approach. 3rd Ed. Taylor & Francis, Boca Raton, FL.

Thrusfield M. 2005. Veterinary Epidemiology. 3rd Ed. Blackwell Science, London (SF780.9 T78)

Grading

There are 3 examinations. Material from lectures, exercises, assigned reading and the discussion sections may be included in the examinations. Some of the exercises will be handed in and graded. The contribution of each to the final grade is as follows:

Exercises	20%
Examinations (3)	80%

Course grading is noncompetitive; course grades will be assigned based on mastery of the material. From past experience we expect that approximately 1/3 to 2/3 of students will receive A- or A, and 1/3 to 2/3 will receive B-, B or B+. Students who do not demonstrate mastery of the material will receive a grade of C or below.

MPM 405/EPI 205A Lecture Schedule 2009

<u>Day</u>	<u>Date</u>	<u>Time</u>	<u>Subject</u>	<u>Text Chapters</u>	<u>Instructor</u>
F	Sept. 25	11-1	Introduction / Epidemiology in Action.	1,2	W. Miller E. Gold
M	Sept. 28	11-12	Measuring disease frequency: Prevalence, incidence, and proportions; Crude, specific, and adjusted rates.	3,4	W. Miller
W	Sept. 30	11-12	Measuring disease frequency: Standardization of rates; Diseases in populations; Multiple determinants of disease.	6,16	W. Miller
F	Oct. 2	11-1	Measuring disease frequency continued. In-class disease frequency exercise.		W. Miller
M	Oct. 5	11-12	Sampling strategies. **Homework 1 due**	8,20	W. Miller/J. Schwind
W	Oct. 7	11-12	Outbreak investigation and molecular epidemiology		M. Jay-Russell
F	Oct. 9	11-1	Outbreak investigation: Procedures and examples; Attack risk tables and case-control approaches. In-class outbreak investigation exercise.	2	J. Mazet
M	Oct. 12	11-12	In-class outbreak investigation continued ** Homework 2 Due**		J. Mazet
W	Oct. 14		Ecosystem health approaches in epidemiology.		C. Johnson
F	Oct. 16	11-1	Examination I		
M	Oct. 19	11-12	Properties of tests: sensitivity & specificity. 5		I. Gardner

W	Oct. 21	11-12	Properties of tests: Predictive values; Multiple tests; True vs apparent prevalence; Gold standards.	5, 18	I. Gardner
F	Oct. 23	11-1	Properties of tests continued. In-class properties of tests exercise.		I. Gardner
M	Oct. 26	11-12	Properties of tests: Sample size for Se/Sp; Likelihood Ratios; ROC. **Homework 3 due**		I. Gardner
W	Oct. 28	11-12	Surveillance for vector-borne diseases in CA.		A. Kjemtrup
F	Oct. 30	11-1	In-class surveillance exercise.		W. Miller
M	Nov. 2	11-12	Surveillance.	17,19	B. Chomel
W	Nov. 4	11-12	Surveillance.		B. Chomel
F	Nov. 6	11-1	Exam II		
M	Nov. 9	11-12	Confounding and Interactions	15	W. Miller
W	Nov. 11		Veteran's Day Holiday		
F	Nov. 13	11-1	Confounding and Interactions Exercise		W. Miller
M	Nov. 16	11-12	Introduction to Etiologic Studies	7-10, 13	E. Gold
W	Nov. 18	11-12	Etiologic studies continued		E. Gold
F	Nov. 20	11-1	Measures of Effect; Causal Inference	11,12, 14	E. Gold
M	Nov. 23	11-12	Clinical trials. **Homework 4 due**		E. Gold
W	Nov. 25	11-12	Variation and bias.	15	W. Miller
F	Nov. 27		Holiday		
M	Nov. 30	11-12	In-class exercise: Radiation and thyroid cancer.		E. Gold
W	Dec. 2	11-12	Radiation and thyroid cancer continued.		E. Gold
F	Dec. 4	11-1	Cumulative course exercise and review session		W. Miller et al.

CUMULATIVE FINAL EXAM: TUESDAY, DECEMBER 8, 3-5 pm.